DOCUMENT RESUME

ED 027 494 AC 004 023

By-DuBois, Philip H.; And Others

Instructional Techniques for Teaching Adult College Credit Courses.

Office of Education (DHEW), Washington, D.C. Bureau of Research.
Bureau No-BR-6-1134
Pub Date 31 Dec 68
Contract-OEC-3-7-061134-1531
Note-48p.; Final report.
EDRS Price MF-$0.25 HC-$2.50
Descriptors-Academic Achievement, *Adult Students, Analysis of Variance, Annotated Bibliographies, *Conventional Instruction, Credit Courses, Demonstrations (Educational), Films, *Higher Education, Participant Characteristics, Participant Satisfaction, *Participation, Post Testing, Pretests, Research, *Teaching Techniques

This study of adult students in elementary psychology classes at University College, Washington University (St. Louis), compared the effectiveness of conventional conditions, in which the instructor sets the stage and full participation in a program of class activities is explicitly or implicitly demanded, with that of permissive conditions, in which the instructor still sets the stage but in which students may choose the degree of participation in activities established by the instructor. In two courses, each divided into two groups according to which form of the comprehensive examination was used as pretest and which as posttest, the correlation was positive between permissive conditions and achievement, with pretest and various control variables partialled out. One of the four part correlations was statistically significant at the .01 level. Accordingly, there is some evidence that adults learn better under conditions of "elective participation." (Also included are schedules for experimental sections, participants' and instructors' evaluation forms, and an annotated bibliography of 17 items.) (authors/ly)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED 027 494

BR 6-1134
PA-24
OE-BR

Final Report
Project No. 6-1134
Contract No. OEC 3-7-061134-1531

Instructional Techniques for Teaching Adult College Credit Courses

Philip H. DuBois
Kingsley M. Wientge
Harry J. Gaffney

Washington University
Saint Louis, Missouri

December 1968

U. S. Department of
Health, Education, and Welfare

Office of Education
Bureau of Research

AC 004 023

Final Report
Project No. 6-1134
Contract No. OEC 3-7-061134-1531

Instructional Techniques for Teaching Adult College Credit Courses

Philip H. DuBois
Kingsley M. Wientge
Harry J. Gaffney

Washington University
Saint Louis, Missouri

December 31, 1968

The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or Policy.

U. S. Department of
Health, Education, and Welfare

Office of Education
Bureau of Research

Contents

		Page
I	Preface	1
II	Summary	2
III	Introduction	3
IV	Methods	4
V	Results	10
VI	Conclusions and Recommendations	25
VII	Appendix A - Schedules for Experimental Sections	28
	B - Participants Evaluation Form	33
	C - Participants Evaluation Form Section II	36
	D - Instructors' Evaluation Check List	37
	E - Annotated Bibliography	38

I

Preface

The research reported herein attempted to study the relationship between a variable called "elective class participation" and academic achievement in credit courses for adults.

The research was made possible by the cooperation of Dean Lynn W. Eley of the School of Continuing Education and of his successor, Dean John B. Ervin. Permission was granted to use as subjects all students in elementary psychology classes in University College of Washington University over a period of two years. Dr. Marion E. Bunch, Chairman of the Department of Psychology, participated in planning the study. His helpfulness in contacts with the instructional staff was invaluable.

Philip H. DuBois was Project Director throughout the study. Dr. Kingsley M. Wientge was Co-director from its initiation through 30 June 1967. Dr. Harry J. Gaffney was Co-director from 1 July 1967 through 30 June 1968. Research psychologist for one year was Joseph Pfeffer, who was succeeded on 1 July 1967 by Mrs. Sue Ault. Mr. Pfeffer participated in the development of the proficiency measures as well as the implementation of the program during its first year. During the second year Mrs. Ault worked actively with all the experimental sections and assumed major responsibilities in the analyses of the data and the preparation of the interim and final reports.

The project staff is particularly indebted to instructors in the experimental sections:

Dr. Kenneth H. Breimeier
Dr. Robert Buckhout
Dr. Edward E. Eddowes
Dr. Mary Grohmann
Dr. Robert E. Lefton
Dr. James F. Lomont
Dr. Robert N. Schneider
Dr. James M. Vanderplas
Dr. Edward Youngling

II

Summary

A distinguishing feature between full-time undergraduates and part-time adult students seems to be "maturity," which involves not only years of chronological age but also the assumption and management of responsibilities in the family, at work, and in the community. In the course of a recent project in adult education (Cooperative Research Project #1338 of the U. S. Office of Education and Washington University) it was discovered that a number of age-related variables, reflecting various aspects of "maturity," are positively and significantly related to adult academic success.

From one point of view this finding is somewhat surprising, since the older adult, with a wide variety of responsibilities, might be considered as having less time for study and class attendance than an individual with fewer commitments. On the other hand, the adult student who is accustomed to being a parent and to playing an important role in business and civic affairs seems to carry into his studies a realization of their importance and a desire to achieve. Of course, we do not know whether outside responsibilities make the adult a more serious student or whether the ability to handle credit course is just one more manifestation of "maturity." In either case it was the aim of this project to explore a method of instruction that aims to capitalize on the greater maturity of adult students.

The study contrasted:

1) Conventional conditions, in which the instructor sets the stage and full participation in a program of class activities is explicitly or implicitly demanded; and

2) Permissive conditions, in which the instructor still sets the stage but in which the students may choose the degree of participation in activities established by the instructor.

In two courses, each divided into two groups according to which form of the comprehensive examination test was used as pretest and which as posttest, the correlation was positive between permissive conditions and achievement, with pretest and various control variables partialled out. One of the four part correlations was statistically significant at the .01 level. Accordingly there is some evidence that adults learn better under conditions of "elective participation."

III

Introduction

Cooperative Research Project 6-1134 was undertaken to investigate the relationship of teaching methods to adult learning at the university level. In particular, the effects of a relatively novel instructional approach, called "elective class participation," on adult academic achievement were explored.

With the ever increasing number of adults enrolled in university evening classes, it is becoming imperative to learn more about the characteristics of this population and the instructional techniques and methods which may benefit them. It is often assumed that the framework traditionally employed for conventional courses is entirely suitable for adult education; this may or may not be the case. At present, instructors of adults have few guidelines for the choice of techniques and methodology, since there has been relatively little systematic study of the relationship of teaching methods to adult learning at the university level.

This project has attempted to broaden this limited knowledge by systematically investigating the effects of one approach to teaching adults in college. In an earlier study (Cooperative Research Project #1338 of the U. S. Office of Education and Washington University) it was discovered that a number of age-related variables reflecting various aspects of "maturity" were positively and significantly related to academic success in adults. The present project attempted to capitalize on this greater maturity by employing a permissive instructional approach which placed increased responsibility for learning on the adult students. The students were encouraged to take a more active role in their own learning, while the role of the instructor tended more toward that of a guide rather than a lecturer and direct source of information. This approach was called "elective class participation"; further delineation of the method will be provided in the "Methods" section.

Over a period of two years (four successive semesters) data were collected on all students enrolled in the introductory psychology classes of University College, the evening division of Washington University. Half of the sections were taught in the conventional way, and the other half were taught using the "elective class participation" approach. Academic achievement was measured by scores on final examination residualized with respect to scores on a pretest given the first class session, which was in reality an alternate form of the final examination.

In addition, students in the "elective participation" sections were asked to complete a questionnaire concerning their attitudes towards that approach at the close of the semester, and instructors were interviewed to ascertain their views about the effectiveness of the method.

The basic hypothesis underlying Project 6-1134 was that adults in the experimental "elective participation" classes would show more posttest gain over pretest score than those in the control classes using a more conventional approach.

IV

Methods

Before a detailed account of the procedures followed during the project is presented, it seems appropriate to explain in greater detail the nature of the "elective class participation" approach employed in the experimental classes. The subject matter to be learned in the course was the same as that in the control classes. Accordingly, the textbook material was identical and the final examinations and pretests the same (or alternate forms) for both groups. The "elective class participation" approach differed from that employed in the control sections in that class attendance in the former was not required or stressed; at the first class meeting the instructor announced that the next required attendance would be at the final examination. Instead of relying largely on the traditional lecture and discussion techniques, a variety of learning experiences was provided during the time periods set aside for regular class meetings during the semester. The student could participate in these experiences according to his own desires. Students were mailed a schedule describing what would transpire at each class meeting and were encouraged to follow their own inclinations as to which meetings they attended.

Among the activities provided for the students in the "elective class participation" sections were:

1. Participation in psychological experiments and administration of psychological tests, followed by interpretation.

2. Laboratory and classroom demonstrations of psychological phenomena.

3. Films and slides on psychological topics.

4. Periodic ungraded feedback quizzes.

Lecture and discussion techniques were also used frequently. As in the control sections, each experimental section had a regularly assigned instructor, but in addition, a graduate assistant employed by the project was available to show films, help conduct experiments, and present demonstrations. "Elective participation" instructors and the research assistant met periodically with the project staff to plan meaningful experiences for the students.

Control sections were taught as usual, the only exception being the administration of the pretest at the first class session and the posttest as at least part of the final examination, to provide data for comparison with the experimental sections.

Format:

There are two semesters of introductory psychology at Washington University, Psychology 205 and Psychology 206. The first academic year of the project, 1966-67, four sections of each were offered each semester; the second year, 1967-68, three sections were offered each semester. To prevent self-selection of subjects, all eight sections of Psychology 205 during the year 1966-67 were designated as experimental sections, while control data were collected in the Psychology 206 sections. In 1967-68 the reverse was the case; all Psychology 206 sections were experimental, while Psychology 205 classes provided control data. A summary of the format, with the number of students enrolled each semester follows.

	Psychology 205	N	Psychology 206	N
Fall 1966	Experimental	114	Control	58
Spring 1967	Experimental	84	Control	95
Fall 1967	Control	96	Experimental	41
Spring 1968	Control	59	Experimental	83

Totals	
Total in Psychology 205	353
Total in Psychology 206	277
Total experimental	322
Total control	308
Total subjects	630

Instructors:

Nine instructors participated in the program by teaching sections of Psychology 205 and Psychology 206. All were regular University College instructors and three were fulltime faculty in the Department of Psychology at the University. The other six were fulltime psychologists at other St. Louis facilities. The names of the instructors and their primary place of employment follow:

Dr. Kenneth H. Breimeier	Concordia Seminary
Dr. Robert Buckhout	Washington University
Dr. Edward E. Eddowes	McDonnell-Douglas Corporation
Dr. Mary Grohmann	Malcolm Bliss Mental Health Center
Dr. Robert E. Lefton	Psychological Associates
Dr. James F. Lomont	Washington University
Dr. Robert H. Schneider	Veterans Hosp., Jefferson Barracks
Dr. James M. Vanderplas	Washington University
Dr. Edward Youngling	McDonnell-Douglas Corporation

It was planned for each instructor to teach both experimental and control sections of both courses in succeeding years. For example, those instructors who taught Psychology 205 (which was experimental) in the fall semester of 1966-67 would teach Psychology 206 (control) the spring semester of that year. Then in 1967-68, they would again teach Psychology 205 fall semester (but it would be a control section for comparison), and Psychology 206 (which would be experimental) spring semester.

Not all instructors, however, remained to teach in all four semesters covered by the project. One dropped out after the first semester and two others after the first year; an instructor not included in the original group was added the second year. As a result, five of the nine instructors taught both experimental and control sections of both Psychology 205 and Psychology 206.

Instruments:

The criterion measure of academic achievement in all classes was posttest gain over pretest score. For this purpose, four 100-item multiple choice tests were constructed, two covering course material for Psychology 205 (designated Forms A and B) and two covering material for Psychology 206 (C and D). Each semester, in half of the Psychology 205 sections, Form A was administered to all students at the first class meeting as a pretest; the other half received Form B. For the final examination, the forms were reversed, the first group taking Form B and the second, Form A. An identical procedure was followed with Psychology 206 sections, using Forms C and D.

After the final examinations had been administered, all students in the elective class participation sections were asked to complete a questionnaire, rating their reactions to the method in general and rating specifically the content of the class meetings they attended. This questionnaire is reproduced in the Appendix.

Interviews were held with the instructors of the experimental sections after they finished working with the project to determine their attitudes and feelings about the "elective class participation" approach. Although these interviews were informal, a check list of topics to be covered was employed to insure that all relevant areas were included in the discussion and so that replies could be compared. All interviews were conducted by the research assistant. A reproduction of the check list used appears in the Appendix.

In addition to data obtained from the instruments mentioned above, University College records provided information about each student to be used as a basis for statistical control. The following items of information were obtained for each student:

1. Sex
2. Number of credit hours attempted the semester he was enrolled in the project.
3. Grade point average for that semester.
4. Number of cumulative hours attempted.
5. Cumulative grade point average.

Human Factors:

Needlessto say, attitudes of both instructors and students toward the "elective participation" approach were crucial to the project results, and steps were taken to effect an initial neutral or positive attitude rather than a negative one. The cooperation of the instructors was considered essential for two reasons. First, the first introduction the students received to the method was from the instructor at the first class meeting; a negative impression could bias the students' attitudes for the entire semester and inhibit learning. Secondly, for the weekly classroom activities, such as films and demonstrations, to be effective in producing learning, it was necessary that they be integrated into the broader framework of subject matter of the entire course; and instructors who were enthusiastic about the project could be expected to do this while it seemed doubtful that those who were hostile or indifferent would make the required effort.

The project attempted to inspire instructor cooperation and enthusiasm in several ways. Initially, letters were sent to all instructors telling them about the project and their role in it. Periodic meetings (generally about three a semester) were held involving the project directors, the research psychologist, and the elective participation instructors for the purpose of mapping out activities for the ensuing class sessions. In these meetings the instructors tended to assume an active role in the planning. Unfortunately, not all instructors were able to attend all meetings and this occasionally resulted in their feeling that they were left out of the decision making.

Another way in which the project tried to gain the instructors' cooperation was by maintaining good communication between them and the research psychologist who worked with their classes presenting the demonstrations and other aspects of the program. The psychologist met individually (or sometimes talked with by phone) each instructor every week to go over the program for that week and iron out any difficulties.

This procedure generally resulted in the smooth running of the elective participation classes and in the instructors' feeling they had control over what was occurring in their classes. All instructors performed their duties as prescribed by the project; most were entirely cooperative, although some objected to certain aspects of the project. This will be discussed further in the section on instructor evaluation.

As previously mentioned, students were initially told about the elective class participation method by their instructors at the first class session. A letter was also sent to them from the project staff, to insure that they were aware of the purpose and nature of the approach being employed. Along with whatever opinions were conveyed to them by their instructor, the attitudes of the students were probably greatly influenced by the quality of the weekly programs provided for them. Consequently, a considerable amount of time went into the planning and rehearsing of these programs. Student evaluation of these activities will be discussed in the section on student questionnaire results.

V. Results

Objective Student Gain in Subject Matter

The following data were collected for each student (in all experimental and control sections) and analyzed in correlation matrices:

1. Sex
2. Hours attempted that semester
3. Semester grade point average
4. Cumulative hours completed
5. Cumulative grade point average
6. Pretest score in course subject matter
7. Posttest score in course subject matter
8. Membership in experimental or control section

Only data were used from students for whom all information was complete.

Intercorrelations are presented in Tables 1 through 4. Table 1 shows the intercorrelations for the 142 cases in Psychology 205 in which Form A of the comprehensive examination was used as the pretest and Form B as the posttest. Table 2 presents the results for 197 cases in Psychology 205 in which Form B of the comprehensive examination was the pretest and Form A the posttest. These two forms seem to be comparable since when they are used as pretests means and standard deviations were approximately the same, as shown in Table 5.

In the Psychology 206 sections there were 191 cases in which Form C was the pretest and Form D the posttest. Intercorrelations are shown in Table 3. In the same course there were 86 cases in which data were available with Form D as the pretest and Form C as the posttest. For this group intercorrelations are reported in Table 4. Pretest means and standard deviations are shown in Table 5. The difference between the means is not statistically significant.

In all analyses enrollment in an experimental or control section was considered the independent variable. This variable was coded dichotomously, with the higher value being assigned to membership in an experimental section. All correlations of this variable with continuous variables were "point biserials," which, of course, is merely an algebraic variation of Pearson product-moment r.

The use of correlational analysis was considered the method of choice for two reasons: 1) It is relatively simple to use any number of control variables simultaneously; and 2) results can be used not only to refute the null hypothesis, but also to obtain an indication of the degree of relationship.

Table 1

Intercorrelations of all Variables
Psychology 205, Pretest Form A; Posttest Form B
N = 142

	6	5	4	3	2	1	0	M	SD
7	-.311	-.045	-.381	-.098	.005	.003	.081	1.40	.49
6		.118	.386	.098	.058	-.065	-.106	5.53	2.41
5			.170	.853	.193	.134	.708	15.34	8.09
4				.232	.193	.001	.155	22.23	22.18
3					.229	.057	.692	15.61	7.19
2						-.095	.251	44.44	8.42
1							.130	1.51	.50
0								64.16	9.74

Table 2

Intercorrelations of all Variables
Psychology 205, Pretest Form B; Posttest Form A
N = 197

	6	5	4	3	2	1	0	M	SD
7	-.186	-.001	-.416	-.125	.070	-.032	.052	1.49	.50
6		.065	.268	.052	-.043	-.088	-.002	5.12	2.28
5			.078	.804	.412	.017	.737	14.20	8.26
4				.208	.092	-.003	.107	21.05	23.04
3					.398	.034	.684	15.09	6.65
2						.013	.449	47.07	8.49
1							.151	1.57	.50
0								65.09	11.57

Identification of Variables

7 Sex
6 Hours attempted
5 Semester grade point average
4 Hours completed
3 Cumulative grade point average
2 Pretest
1 Experimental-control
0 Posttest

Table 3

Intercorrelations of all Variables
Psychology 206, Pretest Form C; Posttest Form D
N = 191

	6	5	4	3	2	1	0	M	SD
7	-.250	.075	-.459	-.006	.069	.011	.203	1.45	.50
6		.073	.310	.086	.090	.093	-.093	5.36	2.49
5			-.028	.768	.339	.011	.740	15.91	7.94
4				.032	.004	-.008	-.192	27.87	26.89
3					.250	.058	.651	16.80	6.59
2						.093	.369	44.87	8.42
1							.094	1.42	.50
0								59.29	10.47

Table 4

Intercorrelations of all Variables
Psychology 206, Pretest Form D; Posttest Form C
N = 86

	6	5	4	3	2	1	0	M	SD
7	-.313	-.026	-.497	-.157	.171	.140	.008	1.47	.50
6		.085	.544	.106	.054	-.074	.060	5.64	2.37
5			.041	.853	.354	-.257	.696	14.86	8.38
4				.125	-.057	-.147	.055	25.37	22.90
3					.283	-.174	.673	15.70	6.73
2						-.058	.455	41.95	7.25
1							-.060	1.50	.50
0								60.60	11.24

Identification of Variables

7 Sex
6 Hours attempted
5 Semester grade point average
4 Hours completed
3 Cumulative grade point average
2 Pretest
1 Experimental-control
0 Posttest

Table 5

Pretest Means and Standard Deviations

	Form A	Form B	t	Significance
M	22.23	21.05	.34	$p > .10$
SD	22.18	23.04		
N	142	197		
	Form C	**Form D**		
M	27.87	25.37	.79	$p > .10$
SD	26.89	22.90		
N	191	86		

Table 6

Correlations Between Experimental versus Control Group Membership and Residualized Postest Score

	N	Part Correlation	t	Significance
Psychology 205				
Form A then B	142	.073	.89	$p > .10$
Form B then A	197	.209	3.00	$p < .01$
Psychology 206				
Form C then D	191	.112	1.55	$p > .10$
Form D then C	86	.147	1.44	$p > .10$

Biserial part correlations were computed between enrollment in experimental versus control section and posttest score, residualized with respect to variables 1 through 6. Results are presented in Table 6. It will be observed that all four correlations are positive, indicating that enrollment in an experimental section was related to a higher posttest score. However, only in one group is the relationship statistically significant.

In Table 6 the dependent variable is residualized with respect to six control variables: sex, hours attempted that semester, semester grade point average, cumulative hours completed, cumulative grade point average, pretest score in course subject matter.

Logically the independent variable (experimental versus control group membership) might have been residualized with respect to the first five variables. If this were done the effect in each case would be to increase the coefficient by .002.

Student Evaluation of "Elective Class Participation:"

As mentioned above, all students in the experimental classes were asked to complete a questionnaire evaluating the "elective participation" method at the end of the course. There were two parts to the questionnaire, one in which they were asked to rate the quality of the class sessions they attended on a nine-point scale (nine being most favorable) and one in which they were to rate the method in general

(See the appendix for reproduction of the questionnaire.)

Table 7 shows the number of students who completed the questionnaire in the Psychology 205 and Psychology 206 sections along with the mean rating they gave all class sessions they rated.

Table 7

Mean Ratings of Class Sessions
(Experimental Group Only)

Population	N	Mean Rating
Psychology 205 Sections	220	6.20
Psychology 206 Sections	149	6.18

The data were further analyzed by breaking the results down into groups: ratings on class sessions that consisted primarily of lecture, demonstrations, films, and feedback quizzes. There were no significant differences found among ratings of the last three, but when each of the last three were compared with the lecture classification it was found that the students rated the classes in which demonstrations, films, and quizzes predominated higher than the straight lecture class sessions. Data are presented in Tables 8 & 9.

Table 8

Means and Standard Deviations of
Ratings of Class Sessions Characterized by
Lectures, Demonstrations, Films, and Feedback Quizzes

(Experimental Group Only)

Type of Class	N	Mean	Standard Deviation
Lecture	667	6.01	2.21
Demonstration	425	6.50	1.22
Film	761	6.45	2.36
Quiz	557	6.34	2.34

Table 9

t Tests for Differences Between Means of Ratings of
Class Sessions Characterized by Lectures, Demonstrations,
Films, and Feedback Quizzes

(Experimental Group Only)

Comparison	DF	t
Lecture vs Demonstration	1090	4.55*
Lecture vs Film	1426	4.78*
Lecture vs Quiz	1222	3.31*
Demonstration vs Film	1184	0.50
Demonstration vs Quiz	980	1.44
Film vs Quiz	1316	1.14

* $p < .005$

It is apparent, then, that students preferred to attend (or at least rated their quality higher) class sessions in which techniques more novel than traditional lectures were used to present material.

The second part of the elective participation questionnaire queried the students about their reaction to the total course; their preference for enrolling again in a similar course; and their preference for the traditional lecture-discussion method of classroom learning. Student responses to the three questions were voluntary, which resulted in an unequal number of responses to each question as some students did not respond to all questions.

Table 10 provides information concerning the students' rating of the total course.

Table 10

Student Rating of the Total Course

	EX.	VG	G	AV.	Fair	Poor	Total
Number of students	11	30	66	30	38	59	234
Percentages	5%	13%	28%	13%	16%	25%	

Examination of the ratings of the total course made by the students suggest several interesting interpretations. Fifty-nine per cent of the students rated the total course average or better. Forty-one per cent rated it fair or poor. Approximately 6 out of 10 students can be said to have reported a reasonably satisfying learning experience, while 4 out of 10 students rated their "elective class" participation a fair or poor learning experience. Several categories of reasons were advanced in the written comments which accompanied the ratings. Most frequent in the fair to poor ratings were comments which were critical of the course content, the lack of class discussion and the lack of course structure. Comments which were praiseworthy emphasized those very aspects that were criticized by those rating the course fair to poor. Favorable raters found the course content stimulating, and liked the idea of the mature adult being responsible for his personal learning pace.

The data suggests several interesting speculations. It seems likely that what has been tapped in the student comments and ratings of the total course reflects differing adult learning styles, or more inclusive, differing adult life styles. An obvious need is for research with adult learners to determine which methods are appropriate for which learning styles.

Student responses to the second question on preference for taking another course conducted in a similar manner, that is, "elective class participation," are reported in Table 11.

Table 11

Preference for Enrolling Again in an "Elective Participation" Class

	Yes	Yes with Changes	No
Number of students	96	162	102
Percentages	26%	45%	29%

The combined percentages for the students reporting yes or yes with changes gives a total of 71 per cent who indicate a preference for re-enrolling in an elective participation type class. The changes suggested in the added comments were in general concerned with increasing the number of tests used, changes in course content such as more up-to-date films, and more class discussion.

Those who responded unfavorably tended to be concerned with lack of motivation, and missed the stimulation of discussions with other students. Again the differences in adult learners appears vividly reflected in the data.

The final question asked the students if they preferred the traditional lecture-discussion method for classroom learning. Table 12 gives the results in answer to this question.

Table 12

Preference for the Traditional Lecture-Discussion Method for Classroom Learning

	Yes	No
Number of students	204	124
Percentages	62%	38%

Asked the question "Do you prefer the traditional lecture-discussion method for classroom learning?" 204 or 62 per cent of the respondents said "yes," while 124 or 38 per cent answered "no." The security of the known lecture-discussion method of teaching appealed to 6 out of 10 adults in the study, even though 7 out of 10 had said that they

would again enroll in an "elective participation class" as it is or with changes. The added comments suggest that the raters favor the traditional class because it provides more class discussion and more carefully structured lecture materials.

In summary, the analysis of student responses to a global rating, preference for a similar course, and preference for the traditional class can be interpreted to indicate that there are at least two and probably several categories of adult learning styles. Significant questions concerning the dimension of learning styles of adults need to be phrased and essential research in controlled classroom setting carried forward to provide meaningful answers if the adult in continuing education is to receive optimal benefits.

Instructor Evaluation of "Elective Class Participation"

All instructors who taught using the "elective class participation" approach were interviewed by the research psychologist after the completion of their teaching assignment to ascertain their attitudes and feelings about the method. A list of topics concerning the effectiveness of the approach was covered with each instructor individually in informal interviews which ranged from twenty minutes to slightly over an hour in duration. The check list appears in an appendix.

Three general topics were covered in the interview: 1) methods and techniques utilized in the elective participation approach; 2) student participation and attitudes; and 3) instructor evaluation of the total approach. Each of these topics was further subdivided into pertinent areas.

Methods and Techniques:

Included in the discussion of methods and techniques were the use of audio-visual aids, such as films and slides; use of classroom demonstrations; feedback quizzes; pretest and posttest; and the role of the technician.

All the instructors interviewed seemed to feel that the utilization of audio-visual aids such as films and slides was a good technique for increasing learning, although one instructor stated that films were often overinclusive and attempted to present too much information. Another instructor commented that a film was often a stimulus to a productive discussion or question period in his class. There were many comments concerning the effectiveness of specific films shown during the project; in general, the newer, more comprehensive (and more artistic) films were received very well, while some of the older and outdated films seemed to detract from learning. One comment that was made by several instructors was that to be an aid to learning, films and slides must be integrated into the broader framework of the entire course. It was felt that the meaningfulness of particular films and slides was not always apparent to the students.

Reaction to the use of classroom demonstrations in the elective participation approach was generally very favorable, although one instructor found them "not terribly useful." Most instructors saw the demonstrations as a means of presenting material in a meaningful way and getting students involved in the learning process. Most said they would like to see more use of demonstrations. It was pointed out that the demonstrations, like the films and slides, must be integrated into the course and presented as informally as possible to insure involvement.

The instructors were asked for their opinions about the use of feedback quizzes, which were administered periodically during each semester but not graded. Only material from the text was included in these quizzes, as was true of both the pretest and posttest. All the instructors felt the feedback quizzes were valuable, and several pointed out that the class sessions at which the quizzes were given were the most heavily attended. Three of the instructors felt the quizzes should have been graded, rather than basing the entire course grade on the final examination score. (This would probably have meant requiring attendance at the sessions when quizzes were administered.) The other instructors, however, felt that the

the value of the quizzes lay in letting the students know how they stood in relation to the material covered in the text, and in showing the distribution of scores to the class.

There was some disagreement among the instructors as to the value of the pretest and posttest, which were administered at the first and last sessions of the course respectively. Some instructors simply commented on the necessity of doing it that way for experimental design purposes. One thought that the pretest could be utilized as a learning technique by going over it in class and providing extra work and stimulation to those who score high. There was some criticism of the tests themselves; some thought items were ambiguous, or too "picky and inclusive." Another instructor pointed out that the pretests and posttests differed somewhat in format from the feedback quizzes, which "may have resulted in retroactive interference." One instructor felt that the major defect of the tests was that the students were tested only for retention of text material, and what they learned from the rest of the course was not measured.

The last topic under methods and techniques was the "role of the technician;" in this case, the research psychologist who functioned not only in keeping communication lines open with the elective participation instructors and the students, but served also as motion picture projectionist, demonstrator, test administrator, and whatever additional roles were required to keep the weekly class sessions running smoothly. Almost unanimously, the instructors found the presence of a technician useful. One instructor, however, stated that the presence of a technician eroded the desire of the instructor for teaching; he felt the technician was in a more or less ambiguous position and should have either more or less participation in the ongoing classes—more, as in a team teaching situation, or less, meaning that the technician should be relegated solely to the role of projectionist, or similar assistant. For the most part, though, comments were highly favorable, pointing out that it relieved the instructor of a good deal of "busy work." Several suggested the use of a technician be incorporated into other courses.

Student Participation and Attitudes:

Three topics were covered in the discussion of student participation and attitudes: the attitudes of the students toward the elective participation method as assessed by the instructors; class attendance; and student participation in the classroom.

The instructors' responses concerning student attitudes were almost overwhelmingly negative. Even in cases where some positive comments were made, they were inserted into a general

framework of negative impressions or given as exceptions to the predominant mood. Thus one instructor said that while most students were dissatisfied with the way the course was being conducted, one bright student endorsed the method and seemed to thrive on it. Another instructor pointed out that students who were self reliant and accustomed to studying on their own liked it. Along the same line, one stated that those students who needed guidance and direction, and those who were dependent, were threatened by the way the course was conducted. Still another instructor said that there were mixed reactions in his class, students tending to line up at one extreme or the other. But, for the most part, the instructors felt that such phrases as "hostile," "negative," "highly suspicious," "feeling cheated," and "wishing the instructor would make them learn" tended to characterize the attitudes of the students toward the elective participation approach. Several instructors expressed the opinion that the students needed or at least expected more structure in the course; two felt that although evening students were more mature than day students in most ways, they (evening students) were actually novices at the student role and, consequently, needed more structure than day students rather than less. The basis for many complaints seemed to be a felt lack of continuity and integration in the way the method worked out in practice rather than a dislike of the elective participation idea itself. According to one instructor, students felt the course program was too "chopped up," with the instructor's contribution being minimal. "There were too many things going on," said another. Students reportedly saw the instructor as escaping work through showing films and presenting other diversions. Another frequent complaint was that the activities presented in the course program sometimes had little relation to the text material, and it was knowledge of the text on which students were to be graded.

Concerning the subject of class attendance, half of the instructors said their attendance was the same as usual, in comparison with other evening introductory classes, and half reported fewer students attending than usual. One instructor pointed out that attendance in his class was not related to the program or topics being presented; "after a few classes, one group of students dropped out, and one group came all the time."

Opinions were mixed as to student participation in the class. One instructor said there was more discussion and general participation in what was going on than was usual in an evening class. Four said there was no difference between elective participation classes and others they had taught, and three thought were was less participation in the experimental classes, one instructor attributing this to the extensive use of films which tended to "make the students more passive."

Evaluation of Total Approach:

This portion of the interview was concentrated on the more global aspects of the instructors' impressions of the elective participation method. They were asked generally how effective they had found the approach in their teaching; and their opinions as to the amount of preparation required (in comparison with other evening introductory classes) and the extent of their voice in the decision-making process were solicited. They were asked to expound on any particular frustrations they had found with the approach, as well as positive aspects they had not mentioned previously. Lastly, they were asked for suggestions for improvement of the method and whether or not they had gained anything from this experience that they would apply to their future teaching.

Concerning the general effectiveness for teaching, both positive and negative opinions were voiced. One instructor believed the approach to be theoretically sound and felt its potential was unlimited. Another commented that the optional class attendance with the looseness of structure resulted in informality and, consequently, ease of learning for the adult students. A third instructor felt the strong point of the method was its placing of the responsibility for learning on the student. A neutral opinion was voiced by one instructor, who said the approach itself was not good or bad; rather its effectiveness was determined by its interaction with the personality and style of the instructor, and in some cases the result was effective, in others not. Two instructors felt the method was inappropriate with evening students; one said it would be more effective with advanced students who did not need as much structure, and the other felt it was inappropriate for night school because of "time limitations and the quality of the students." Two other instructors felt there was a problem with the instructor losing control of the class, since the students were aware they would only be graded on their retention of material from the text and not what was presented in class.

As for preparation required for teaching the elective participation classes, aside from one instructor who said he used more preparation than usual due to unfamiliarity with the text and one instructor who said it was about the same as usual, all the instructors said the time they spent in preparation was considerably less than usual because of the large portion of the course occupied with films, demonstrations, and other activities managed by the technician.

There was considerable difference of opinion as to whether or not the instructors felt they had a sufficient voice in the decision-making as to the way their classes were taught or what was presented to the students. Four instructors felt they had enough voice in what was done in their classes, although one said he was not always able to

influence decisions because of inability to attend all of the planning meetings. Two instructors said they had no voice in how things were done because they were unable to attend any of the meetings. The remaining instructors felt they did not have enough voice because suggestions they made were either not listened to or tabled indefinitely. (Parenthetically, it may be noted that meetings of the instructors were scheduled at their convenience and at times they stated would be acceptable.)

Five of the instructors mentioned no "frustrations" with the elective participation approach other than those already discussed above. One instructor said the entire course was a series of frustrations and a "farce." Two others mentioned specific frustrations. One continually felt that there was not enough time to lecture on the various topics because of the extensive use of films, demonstrations, and the like; and the other was distressed about "bad coordination." ("I didn't always know what was going on.")

As for positive aspects of the elective participation approach, one instructor stated that the method had no redeeming qualities at all, and three instructors had nothing to add to previous comments. Two instructors mentioned that class demonstrations were very valuable in presenting material and effecting interplay on the part of the students. Two other instructors felt the whole concept of elective participation was a positive aspect, and another commented on the valuable assistance of the technician.

All of the instructors made some suggestions for improvement of the elective participation approach, although in one case the suggestion was that it be abandoned. Most of the suggestions centered around improving the involvement of the students in the course and its subject matter, one instructor stating that there should be more effort to get the cooperation of the students by letting them participate in planning the program. Another instructor also believed that the students' objectives should play a role in determining the program, and he suggested that there be a greater element of choice in participation on the part of the student, produced by having several different activities going on simultaneously each week. That way, the student could elect to attend the one of most interest or relevance to him. Another instructor suggested the students be asked at the first meeting of the class to submit questions they have about psychology; then these questions would be used in planning the remaining course program. Another instructor would make use of the principles of group dynamics to effect student involvement. Other sug-

gestions were that there be more time for planning the course program prior to the beginning of the semester, that feedback quizzes be graded, and that generally the content and efficiency of the coure program be improved.

At the close of the interview the instructors were asked if they had gained anything that they would use in their future teaching experience by participating in the project. One instructor said that all that he gained was negative, but the other instructors all felt they had learned something applicable. Most of the instructors mentioned something they had gained from the specific techniques used in the course program. Three said that they would probably use more films in the future, and two said they would conduct more demonstrations. One liked the effectiveness of the feedback quizzes, and another would like to have a technician available to assist in future courses. Three instructors felt they would use concepts related to the elective participation approach in a broader way; one liked the unstructured, loose organization, and another said having flexibility in class structure would make it possible for him to spend more time on material external to the text in the future. A third liked the idea of involving students more in the learning process.

It is difficult to summarize the diverse opinions voiced by these instructors in their interviews. There seems to be no general consensus of opinion about the methods and techniques used in the approach, although most instructors did seem to feel that the films, demonstrations, feedback quizzes, and the aid of a technician were helpful. Agreement was found in the instructors' perception of student attitudes toward the method; almost unanimously, they characterized these attitudes as hostile and negative. Regarding the general approach, however, there again was diversity of opinion; it could perhaps be said that most of the instructors (with several exceptions) thought the general concept underlying the approach was good, but there was considerable criticism of the way it worked out in practice.

VI

Conclusions and Recommendations

Many educators have emphasized the need for research in the area of adult education. While many fulltime faculty members have accepted the importance of an educational system for the mature adult, few are personally involved.

Today the area of continuing education for mature adults is important psychologically, sociologically and economically. What do adults look for in education? Do they need more immediate feedback so that they can feel more secure in a learning situation? Have their life experiences made them disenchanted with textbook-lecture type approach? Would audio-visual aids, automation, technology and teacher's assistants improve the quality of the learning?

The present findings indicate that mature adults perform at least as well and possibly better academically when permitted to experience teaching methods differing from conventional classroom programs. The method which uses audio-visual aids, demonstrations and a teacher aid is an alternative that should be explored further.

Many technological developments have taken place in the field of education. So far, findings have been applied primarily with younger pupils, although some innovations such as language laboratories, science laboratories and programmed instruction have been tried out in higher education.

How can technological developments be used with an adult population? Will the desire of adults to learn increase? Will innovations satisfy some of their needs so that the learning experience is not a return to the adolescent years?

Contrary to what many adults say, it is highly probable that technology and automation are part of the answer to the question of an ideal educational system for part-time, mature adults. If we make the learning experience attractive, non-threatening and enjoyable, it may be that more adults will continue their education.

Possibly the most important implication of the present study is that effective adult education should be planned. While we do not know from this study alone what particular design results in most effective learning, it is apparent that the design of the course can be greatly altered without reduction in efficiency.

Probably a design which takes into account individual differences in prior knowledge, aptitudes, interests and time available would be most effective in adult learning.

The use of quizzes to provide feedback information and to evaluate readiness to attempt the next phase of the instruction seems highly appropriate. In this study the feedback quizzes were used only to provide information to students on how well they had learned the material up to that point. Future research might well center around instructional programs that would be made available to students in accordance with their readiness to learn.

In planning the experimental sessions attention was given to the availability of motion pictures, slides, demonstrational material and participation in experiments. The courses met once a week for two and a half hours with the first evening devoted to orientation and the last to the final examination. Only 14 periods a semester, aggregating 35 clock hours, were available for class programs. Consequently, only a small proportion of the learning experiences which were considered for inclusion could actually be used. This leads to the possibility that a course might be organized with a wide variety of learning experiences available from which students could pick and choose at will, particularly as indicated to them by achievement on diagnostic tests.

Perhaps what adult education needs most is an armamentarium of proficiency measuring devices by which attainment in a given field may be certified. The function then of the educator would be to provide a range of educational experiences which would lead to the development of the desired proficiency. An educational transcript might then become a statement of the levels of proficiency attained in different areas.

A final implication of the present study comes from the role of the educational technician, which in this experiment was assumed by the graduate student employed as research psychologist. It was found that many of the 35 hours alloted to experimental instruction were actually handled by the educational technician, who showed films and slides, and conducted feedback quizzes and experiments. Certainly wider use of technical assistants in adult education would seem to be appropriate. With proper organization the time of highly qualified personnel might be used largely for lectures and discussions, with other parts of the

instructional program carried on under their general supervision by technicians who would not need to have the same degree of specialized attainment. One of the ways to meet the current shortage of highly trained instructors and professors might be to relieve them of more of their routine functions both inside and outside the classroom. It is conceivable that one instructor and two assistants could handle three evening sections even more effectively than three instructors do under usual conditions. This would take considerable advanced planning and careful adherence to schedules, but is by no means impossible. The chief argument against it is one of student acceptance. Adult students, such as those in this study, seem to regard any session in which the instructor was not physically present as somehow being of less value than when the instructor was actually in the room. This feeling might be overcome by greater availability of the instructor for formal and informal conferences.

VII

Schedules for Experimental Sessions

Psychology 205 - Fall Semester 1966

1st Week - Introduction

2nd Week - Lecture and discussion on the history and development of psychology.

Tests of interests, values, and mechanical comprehension were distributed to students wishing to complete them at home and to return them for scoring and interpretation.

3rd Week - One hour of programmed instruction on efficient study procedures. A 40-minute test of reading comprehension was administered. This test of vocabulary, comprehension, speed, and total reading ability was scored and included in the discussion of the tests of interests, values, and mechanical comprehension.

4th Week - Interpretation of the test battery of adult interests, values, mechanical comprehension and reading ability. Each student was furnished a profile of his test scores. The various uses of psychological tests was related to the understanding of individual differences.

5th Week - A program of movies and discussion on the brain and the central nervous system.

6th Week - Lecture, discussion and review by the class instructor on the first three chapters. Feedback quiz of ten questions from each chapter was administered, scored and discussed.

7th Week - Film on heredity with additional lecture and discussion by the instructor.

8th Week - The Multi-Aptitude Test was administered providing information about testing techniques and demonstrating the different kinds of test items applicable to measuring intelligence and other psychological characteristics.

9th Week - Films on basic research in Skinnerian behavior theory and discussion.

10th Week - Lecture and discussion on the history and development of the concept of intelligence within psychology.

11th Week - Lecture and discussion of learning process.

12th Week - Administration of DuBois-Bunch Learning Test with lecture and discussion of Forgetting.

13th Week - Feedback quiz and review.

14th Week - Continuation of discussion of Forgetting with demonstration of proactive and retroactive inhibition .

15th Week - Lecture and discussion on Thinking and review of course.

16th Week - Final examination.

Psychology 205 - Spring Semester 1967

1st Week - Introduction

2nd Week - One hour program on efficient study procedures. A short reading test was administered and tests of interests, values, and mechanical comprehension were distributed to be completed at home and returned for scoring and interpretation.

3rd Week - Lecture and discussion on the history and development of psychology as a science.

4th Week - Motion pictures on the brain and the central nervous system, followed by discussion.

5th Week - Test battery administered in the second week was interpreted and the student received his profile. The various used of psychological tests by psychologists was related to the concept of individual differences.

6th Week - Lecture, discussion and review of the first three chapters. A feedback quiz of ten questions from each chapter was administered, scored and discussed.

7th Week - Film on the Development of Individual Differences, followed by discussion.

8th Week - Lecture and discussion on concepts of intelligence.

9th Week - Film: Behavior Theory in Practice. Discussion.

10th Week - Lecture and discussion on the learning process.

11th Week - Feedback quiz and review.

12th Week - Films on foundations of learning, lecture, and discussion.

13th Week - Lecture and discussion on Remembering and Forgetting; short experiment on Forgetting and Learning.

14th Week - Experiment: "What Do You Think." Lecture and discussion on thought.

15th Week - Feedback quiz and general review.

16th Week - Final examination.

Psychology 206 - Fall Semester 1967

1st Week - Introduction

2nd Week - Lecture on emotion, conflict, and personality.

3rd Week - Demonstrations on lie detection and subliminal perception; administration of a personality test; lecture on emotion, conflict, and personality.

4th Week - Films to illustrate various theories and techniques of psychotherapy.

5th Week - Feedback quiz and review.

6th Week - Lecture on motivation, sensation, and perception; film to illustrate the role of motivation in learning.

7th Week - Lecture on motivation; films to illustrate various topics in sensation.

8th Week - Demonstration of sensory phenomena; lecture and slides on sensation.

9th Week - Lecture on attention and perception; slides, films, and demonstration to illustrate various perceptual phenomena.

10th Week - Lecture on perception; feedback quiz.

11th Week - Review of motivation, sensation, and perception.

12th Week - Lecture on communication and language; film on the effects of reinforcement therapy on the acquisition of language.

13th Week - Lecture on social behavior; film: "Case History of a Rumor."

14th Week - Film to illustrate the concept of self-actualization in group therapy.

15th Week - Lecture on working efficiently; lab demonstration and film; feedback quiz.

16th Week - Final examination.

Psychology 206 - Spring Semester 1968

1st Week - Introduction

2nd Week - Lecture on emotion, conflict, and personality.

3rd Week - Demonstrations on lie detection and subliminal perception; film on conflict, and slides on emotion, conflict and personality; administration of a personality test.

4th Week - Films to illustrate various theories and techniques of psychotherapy.

5th Week - Film on mental health; feedback quiz.

6th Week - Lecture and slides on motivation; film to illustrate the role of motivation in learning.

7th Week - Lecture on motivation and sensation; films to illustrate various topics in sensation.

8th Week - Lecture, slides and films on sensation and perception.

9th Week - Lecture on perception; feedback quiz.

10th Week - Film to illustrate the concept of self-actualization in group therapy.

11th Week - Lecture on communication and language; film on the effects of reinforcement therapy on the acquisition of language.

12th Week - Lecture on social behavior; film: "Case History of a Rumor."

13th Week - Films and slides on social behavior.

14th Week - Lecture on working efficiently, demonstration and film; feedback quiz.

15th Week - Final examination.

ELECTIVE CLASS PARTICIPATION

PARTICIPANTS EVALUATION FORM

Student's Name_____ Date_____

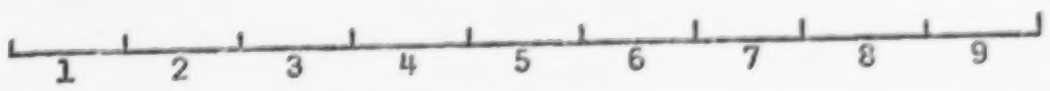
Instructor_____ Class Number_____ Section_____

The purpose of this Participants Evaluation Form is to enlist your support in analyzing the method of instruction used in this class. We have designated the method as "elective class participation." Your objective appraisal of the components of the program will aid in planning future programs. It is important, therefore, that you objectively evaluate the components of the program as listed below. After each rating scale a space has been left for written comments, if you wish to add any.

The scales below go from one (1) to nine (9). The digit nine (9) represents the degree of highest satisfaction, i.e., greatest contribution. The digit one (1) represents the least satisfactory, the least contribution end of the scale. Place your check in any of the spaces from 1 to 9 according to your evaluation of that component of the program. Use the blank space following each rating scale for any written comments. Rate only those activities which you attended in person. If you were not present leave the question blank.

2nd Class

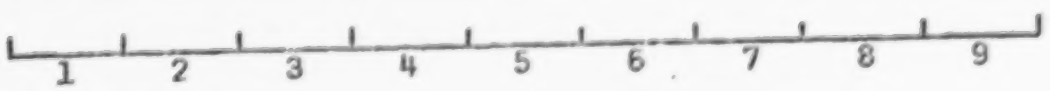
Lecture on emotion, conflict, and personality.



Comments:

3rd Class

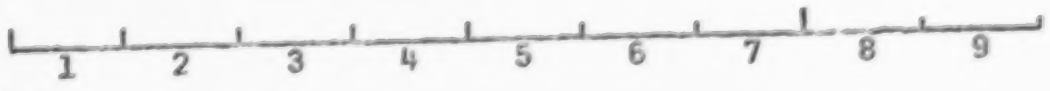
Demonstration on lie detection; film on conflict; administration of a personality test.



Comments:

4th Class

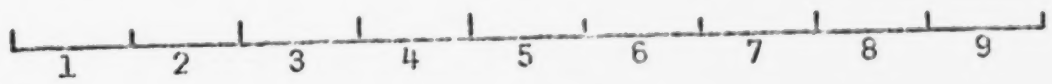
Films to illustrate various theories and techniques of psychotherapy.



Comments:

5th Class

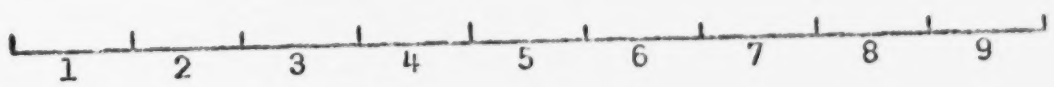
Film on mental health. Feedback quiz on Munn, Chapters 7, 8 and 9.



Comments:

6th Class

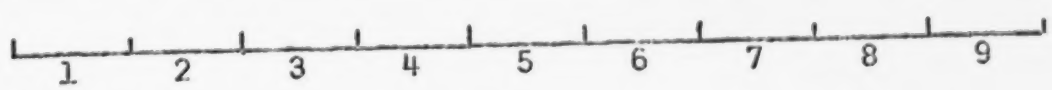
Lecture on motivation; film to illustrate the role of motivation in learning.



Comments:

7th Class

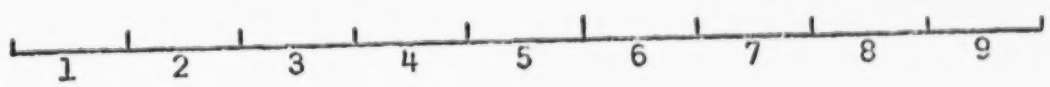
Lecture on motivation and sensation; films to illustrate various topics in sensation: the eye, the ear, and the nature of color.



Comments:

8th Class

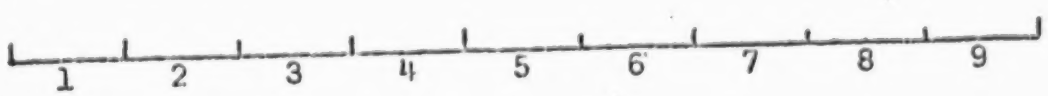
Lecture and films on perception: perceptual phenomena and illusions.



Comments:

9th Class

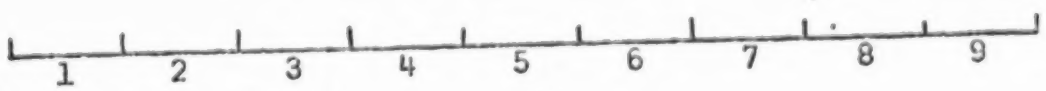
Lecture on perception. Feedback quiz on Munn, Chapters 6, 15 and 16.



Comments:

10th Class

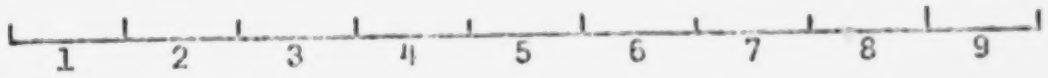
Film to illustrate the concept of self actualization in group therapy.



Comments:

11th Class

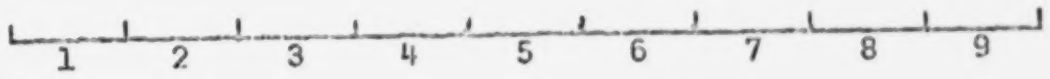
Lecture on communication and language; film on the effects of reinforcement therapy on the acquisition of language.



Comments:

12th Class

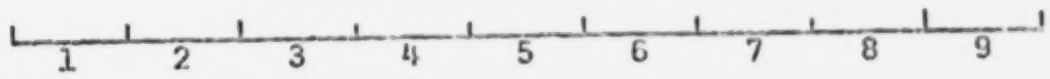
Lecture on social behavior; film: "Case History of a Rumor."



Comments:

13th Class

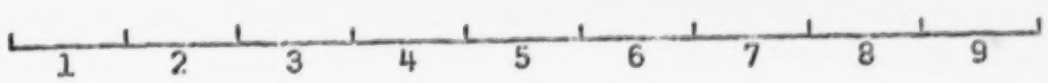
Films on prejudice and experimental research in social psychology; lecture on social behavior.



Comments:

14th Class

Lecture on working efficiently and films showing laboratory at McDonnell-Douglas Aircraft; quiz on Munn, Chapters 14, 17 and 18.



Comments:

PARTICIPANTS EVALUATION FORM

Section II

Student rating of the total course.

_____

Comments: (Include pertinent comments concerning the class)

1. Would you prefer to again enroll in a class conducted as this class has been?

   Yes_____ No_____ With changes_____

2. What changes would you suggest?

3. Do you prefer the traditional lecture-discussion method for classroom learning?

   Yes_____ No_____

Instructors' Evaluation Check List

(Topics covered in informal interview with each instructor)

I. Methods and Techniques

- Audio-visual aids (films, slides)
- In-class demonstrations
- Feedback quizzes
- Pretest and posttest
- Technician's role

II. Student Participation

- Students' attitudes toward project
- Class attendance
- Class participation

III. Evaluation of Total Approach

- Effectiveness for teaching
- Preparation required
- Voice in decision-making
- Frustrations
- Positive aspects
- Suggestions for improvement
- Applications to future teaching

Annotated Bibliography: Techniques of Teaching Adults

Bigger, J. H. The single presentation as an approach to teaching. Adult Educ., 1961, 11, 84-91.

This paper reports results of a questionnaire answered by 38 teachers of adult learners; most of the respondents were experienced educators employed by universities. The questionnaire focused on the single presentation of educational material as a learning experience, most often used in a conference or institute setting. It was found that none of the respondents felt that methods used in their regular assignments were directly applicable to a single-presentation approach. A preference was expressed by most for the lecture-discussion method of presentation as being the best adapted to this type of learning experience. All respondents objected to a straight lecture method.

Brunner, Edmond D., Wilder, D. S., Kirchner, C., and Newberry, J. D. Methods and techniques in adult education and the uses of discussion. Chapters IX and X in An overview of adult education research. Chicago: Adult Education Association, 1959.

In the first of these chapters the authors discuss some of the research that has been conducted on various teaching techniques with adults; the focus is on the use of audio-visual devices. Referring to results of studies of graphic and pictorial techniques, the authors state that often special training is required in order to understand graphic material properly and that this kind of presentation is usually understood better when supplemented with verbal explanation.

The use of films and slides has been found most effective, also, when accompanied by lecture or discussion. Presenting material by radio and television has been found most effective when it is "entertaining." One study showed television to be superior to radio and radio to films when memory of advertising brand names was the criterion. Differences were found, however, for age, sex, and education. Children seem to shift from auditory to visual dominance when they learn to read, and there is often a shift back to auditory dominance in later life, particularly among women and the less well educated. Another study showed that advantages of auditory devices diminished with increasing difficulty of material.

The authors summarize the research on audio-visual techniques by stating that "most authors agree that adult education can be successfully conducted using any audio-visual aid or combination of aids, and that the question of effec-

tiveness of technique must take into consideration the habits and abilities of the potential participants with regard to each technique." The technique of role-playing is discussed briefly, and the authors point out that research is needed to determine what sorts of people, topics, and situations lend themselves to its effective use. In the chapter on discussion the authors present results of studies on the effectiveness of lecture versus discussion methods, as measured by social or behavioral change; most favor the discussion method.

Collican, P. M. A study of the effectiveness of teaching by television vs. teaching by the use of an extension bulletin. Mich. Rev. of Extension Research, 1960, 1.

Using samples randomly drawn from volunteer adult groups, this investigation found that the group viewing a television program had a significantly greater change in knowledge than did those reading a bulletin containing the same information. Differences were measured by means of a pretest and a posttest.

Dietrick, David C. Review of research. In R. J. Hill, A comparative study of lecture and discussion methods. White Plains, N. Y.: Fund for Adult Education, 1960.

This is a brief review of studies concerning the relative efficacy of lecture versus discussion teaching methods. The research discussed is not limited to the adult population; in fact, most was conducted on young college students. When acquisition of information is the criterion, according to the author, lecture and discussion techniques have been found about equally effective. But the discussion method seems to be superior in effecting the retention of information over a period of time. The discussion method is also more effective as a means of changing attitudes and in the development of abilities and desirable interpersonal relationships in the classroom.

The author points out that there are studies with results opposing these general conclusions and that many of the studies have not been comparable in conditions, populations, or treatments. Consequently, these issues have not been satisfactorily explored, and further research is necessary. It is also his opinion that it is difficult to apply the available findings to the adult education situation since many of the studies were conducted on younger populations.

Hill, Richard J. A comparative study of lecture and discussion methods. White Plains, N. Y.: Fund for Adult Education, 1960.

This is a report of an extensive study conducted to determine the relative efficiency of lecture and discussion techniques in producing learning in adults. Subjects were enrolled in an anthropology course through the University Extension of the University of California at Los Angeles. There were twelve discussion groups, ranging in size from 22 to 28 members; one large lecture class of 233 students; and two small lecture classes of 25 students each. The subject matter and reading material were the same for all classes, and each meeting included a half-hour dramatic recording. Participants filled out questionnaires at the beginning and end of the course; these included knowledge of anthropological concepts and attitude measurement. Interviews were also conducted with participants which concentrated on the effects of participation and the participants' evaluation of the program. In addition, trained observers attended each class meeting and systematically noted attendance, participation, topics discussed, and particular elements of leader or lecturer behavior.

Generally, results showed lecture and discussion techniques to be about equally effective in producing learning. Only slight changes in attitudes were observed, and these were not a function of technique; this is considered by the author to be a function of the type of subjects who enroll in this kind of course--the professional, the educated, and the economically established.

Johnson, H. W. Education for management and technology in the 1970's. Science, Vol. 160, 620-627.

This article is a discussion and elaboration of the author's belief that "the more critical needs of management in the next decade will be met by the identification and cultivation of the innovative, creative, adaptive individual who sets as his goal the translation of technology for society's needs." Relevant research and the role of the university are explored.

Kreitlow, B. W., and Edwards, W. P. Effectiveness of lecture, bulletin, and film in adult settings. Adult Educ., 1962, 12, 142-152.

This study investigated the effectiveness of four methods in communicating the results of a school district reorganization study. Subjects were 151 school board members, who received a lecture and a bulletin describing results; 78 homemaking club leaders and 313 homemaking club members, with whom the lecture, bulletin, and film methods were compared; 113 homemaking club leaders, who received results from

either television or bulletin; and 106 rural school teachers and second year country college students, who were compared on results from lecture, film, and bulletin. Samples within each group were randomly drawn.

In the groups in which the lecture was compared with the bulletin, those who received the former performed better on a check list of content. Lecture was also found superior to the film. Differences were slight between film and bulletin methods, but bulletins were found to be superior to television.

Lacognata, A. A. A comparison of the effectiveness of adult residential and non-residential learning situations. Chicago: Center for the Study of Liberal Education for Adults, 1961.

Lacognata studied the acquisition and use of knowledge about attitudes toward the insurance profession, attitudes toward fellow students, patterns of interaction, and opinions of the program. Residential students were superior on examinations of both knowledge acquisition and knowledge application. Residential students showed greater "professionalism" after the learning experience and also studied more outside of class.

Liveright, A. A. Strategies of leadership in conducting adult education programs. New York: Harper & Row, 1959.

This study used a representative sample of informal adult education programs to analyze adult learning situations and variations of leadership styles. Four factors were found, any of which could be dominant in the adult learning situation: 1) kind of group, 2) kind of program, 3) role conceptions of the leader, and 4) use of methods and materials. Appropriate and inappropriate types of leadership for various adult programs are discussed.

Palmer, R., and Verner, Coolie. A comparison of three instruction techniques. Adult Educ., 1959, 9, 232-238.

This is a report of an experiment conducted in an Air Force Primary Pilot Training School to determine the effectiveness of three instruction techniques: lecture, discussion, and combination lecture-discussion. Subjects were 130 males between the ages of 19 and 27, equated for mental ability, who were enrolled in six sections of an aviation psychology class. Educational status ranged from high school to college graduation with most of them having had some college.

The instructor was the same in all classes. In two sections the material was presented by lecture with only five minutes reserved at the end of the hour for questions. In two others, the responsibility for the content of the course was transferred to the students through detailed reading assignments outside the classroom. Classes were used only for discussion purposes. In the remaining two sections, half of each class period was allotted to lecture and the other half to discussion.

The same test of course content was administered at the beginning of the course and at its termination. Results showed the lecture technique produced more achievement than did the discussion or the lecture-discussion methods. This finding is considered applicable to immediate recall only. A measure of student satisfaction showed the lecture-discussion method to be preferred over the other two methods.

Schramm, Wilbur. The research on programmed instruction. U.S. Dept. of Health, Education, and Welfare, Office of Education, Bulletin 1964, No. 35. Washington, D. C.: Government Printing Office, 1964.

An annotated bibliography on programmed instruction and teaching machines.

Solomon, Daniel, Bezdek, W. E., and Rosenberg, L. Teaching styles and learning. Chicago: Center for the Study of Liberal Education for Adults, 1963.

The study reported in this paper was conducted for the purpose of identifying the determinants of effective teaching for adults. Twenty-four teachers of introductory American government (an evening class) from Eastern and Midwestern colleges and universities were observed in the "natural setting" of the classroom. Students, trained observers, and tape recordings all were used in rating the instructors' behavior on a 38-item check list as well as on broader categories. Teachers also completed a questionnaire concerning course objectives and motivation toward teaching.

A factor analysis of this data produced eight factors, representing eight clusters of variables. They were labeled as follows: 1) permissiveness vs. control; 2) lethargy vs. energy; 3) aggressiveness vs. protectiveness; 4) obscurity, vagueness vs. clarity, expressiveness; 5) encouragement of content-related (factual) student participation vs. nonencouragement of participation, emphasis on student growth; 6) dryness vs. flamboyance; 7) encouragement of students' expressive participation vs. lecturing; and 8) warmth vs. coldness.

A test was administered to students in these classes both at the beginning and at the end of the semester to assess learning of factual information and comprehension of a difficult passage. Gains in factual information were found to be related to teachers' scores on factors 4 (clarity, expressiveness) and 7 (lecturing). Comprehension gains, however, were associated with a moderate position on the permissiveness-control continuum (factor 1), and with factors 2 (energy), 3 (aggressiveness), and 6 (flamboyance).

Results were also broken down by student characteristics. Students with jobs learned most with teachers who were relatively aggressive and who emphasized student factual participation. Women did best with teachers high in lecturing. Students 19 and over learned most factual material from instructors who emphasized student factual participation.

Class size was involved in several significant interactions. Students in large classes learned best with permissive teachers who emphasized student growth, were warm and flamboyant. Students in small classes did best with teachers who lectured, were "dry," and emphasized student factual participation.

Solomon, Daniel, and Miller, H. L. Exploration in teaching styles. Chicago: Center for the Study of Liberal Education for Adults, 1961.

This is a preliminary report of research conducted on the relationship between teaching styles and learning in adults. Instructors of various subjects were interviewed intensively, and when data gathered from these interviews was analyzed, seven clusters of teaching styles were identified. They were 1) businesslike, objective, impersonal; 2) emphasis on communication; 3) personal approach; 4) self-involvement; 5) sensitivity toward students, interest in students; 6) protective behavior; and 7) stimulating the student, flamboyance. The larger research project is reported in Solomon et. al., op. cit.

"Tools for Teaching." Forbes, August 1, 1968.

In this article, new developments in "individually programmed instruction" are discussed, with particular reference to the publishing industry's innovations in programmed courses and teaching machines. The use of these new techniques is viewed as a necessary step in combating the increasing costs of education. A discussion of the value of teacher assistants and an interview with B. F. Skinner are also included.

Verner, Coolie, and Booth, A. Managing the learning experience. Chapter V in Adult Education. New York: Center for Applied Research in Education, 1964.

In this article the authors discuss the elements of the adult education process, which they specify as 1) method, or the organization of those who are to be educated; 2) techniques, or the means by which the learning task is managed or presented; and 3) devices, or the conditions utilized to supplement the techniques and maximize learning.

Methods are individual or group, the former consisting of correspondence study, apprenticeship or internship, and directed individual study; and the latter encompassing the class, discussion group, workshop or institute, meeting, and forum. Community development as a method of study which may lead to action is also discussed. The authors state that the discussion group is equal to or superior to other methods when the objective is change in socially based behavior and that it is effective in developing the understanding of concepts, recognizing relationships, and integrating learning with experience. It is not useful, they say, in content acquisition or the teaching of manipulative skills. They cite studies of participant characteristics which indicate that those in discussion groups have a higher educational level, higher socio-economic status, and higher social participation scores. The meeting method has been found useful in conveying information but not for teaching involved learning tasks.

Techniques may be used 1) to acquire information, such as the lecture or speech, or panel; 2) to acquire a skill, such as the process-demonstration, role-playing, and drill or practice; or 3) to apply knowledge, such as group discussion. Devices may be either illustrative, such as films, slides, and demonstrations; extension, such as radio and television; environmental, such as the arrangement of seating; or manipulative, e.g., tools or equipment. The selection of appropriate methods, techniques, and devices is discussed.

Verner, Coolie, and Kulich, Jindra. Programming. Review of educational research, 1965, 35, 177-194.

This article comprises a review of research relevant to the design and management of instructional situations in adult education, the bulk of which is discussed elsewhere in this bibliography.

Welch, J. H., and Verner, Coolie. A study of two methods for the diffusion of knowledge. Adult Educ., 1962, 12, 231-237.

This study reports an investigation of the effectiveness of the group short-course method (consisting of four half-day sessions of lecture and demonstrations) and the bulletin method of inducing learning. Subjects were Missouri adults employed in the food service industry, and the content consisted of various behavioral practices appropriate to that industry. The criterion was the degree to which the subjects adopted the presented practices after they were exposed to one of the two methods. The group short-course method was found to be significantly better than the bulletin method in producing the desired learning. A combination of the two methods did not appreciably increase learning over the group method.

ERIC Clearinghouse
APR1 1969
on Adult Education